

Improving the Utilization of *Telfairia occidentalis* Leaf Meal with Cellulase-Glucanase-Xylanase Combination and Selected Probiotic in Broiler Diets

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Abstract : *Telfairia occidentalis* is a leafy vegetable commonly grown in the tropics for nutritional benefits. The use of enzymes and probiotics is becoming prominent due to the ban on antibiotics as growth promoters in many parts of the world. It is conceived that with enzymes and probiotics additives, fibrous leafy vegetables can be incorporated into poultry feeds as protein source. However, certain antinutrients were also found in the leaves of *Telfairia occidentalis*. Four broiler starter and finisher diets were formulated for the two phases of the broiler experiments. A mixture of fiber degrading enzymes, Roxazyme G2 (combination of cellulase, glucanase and xylanase) and probiotics (*Turbotox*), a growth promoter, were used in broiler diets at 1:1. The Roxazyme G2/*Turbotox* mixtures were used in diets containing four varying levels of *Telfairia occidentalis* leaf meal (TOLM) at 0, 10, 20 and 30%. Diets 1 were standard broiler diets without TOLM and Roxazyme G2 and *Turbotox* additives. Diets 2, 3 and 4 had enzymes and probiotics additives. Certain mineral elements such as Ca, P, K, Na, Mg, Fe, Mn, Cu and Zn were found in notable quantities viz. 2.6 g/100 g, 1.2 g/100 g, 6.2 g/100 g, 5.1 g/100 g, 4.7 g/100 g, 5875 ppm, 182 ppm, 136 ppm and 1036 ppm, respectively. Phytin, phytin-P, oxalate, tannin and HCN were also found in ample quantities viz. 189.2 mg/100 g, 120.1 mg/100 g, 80.7 mg/100 g, 43.1 mg/100 g and 61.2 mg/100 g, respectively. The average weight gain was highest at 46.3 g/bird/day for birds on 10% TOLM diet but similar ($P > 0.05$) to 46.2 g/bird/day for birds on 20% TOLM. The feed conversion ratio (FCR) of 2.27 was the lowest and optimum for birds on 10% TOLM although similar ($P > 0.05$) to 2.29 obtained for birds on 20% TOLM. FCR of 2.61 was the highest at 2.61 for birds on 30% TOLM diet. The lowest FCR of 2.27 was obtained for birds on 10% TOLM diet although similar ($P > 0.05$) to 2.29 for birds on 20% TOLM diet. Most carcass characteristics and organ weights were similar ($P > 0.05$) for the experimental birds on the different diets except for kidney, gizzard and intestinal length. The values for kidney, gizzard and intestinal length were significantly higher ($P < 0.05$) for birds on the TOLM diets. The nitrogen retention had the highest value of 72.37 \pm 0.10% for birds on 10% TOLM diet although similar ($P > 0.05$) to 71.54 \pm 1.89 obtained for birds on the control diet without TOLM and enzymes/probiotics mixture. There was evidence of a better utilization of TOLM as a plant protein source. The carcass characteristics and organ weights all showed evidence of uniform tissue buildup and muscles development particularly in diets containing 10% of TOLM level. There was also better nitrogen utilization in birds on the 10% TOLM diet. Considering the cheap cost of TOLM, it is envisaged that its introduction into poultry feeds as a plant protein source will ultimately reduce the cost of poultry feeds.

Keywords : *Telfairia occidentalis* leaf meal, enzymes, probiotics, additives

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